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Chemical solution deposition on textured metal substrates: Enabling sustainability with large-scale and flexible functional thin films

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The deposition of chemical solutions on textured metal substrates by means of dip-coating followed by adequate thermal treatments is a convenient way for manufacturing thin and flexible films of functional materials with a high degree of preferential orientation. This process is relatively cheap and can be scaled up to coat large areas. After an introduction to the technology based on our previous work on the manufacture of bi-axially oriented high-temperature superconducting thin films including an overview of the metal substrate preparation, I shall present recent activities involving other types of materials such as $(K,Na)NbO_3$ and $BiFeO_3$ piezoelectrics, for which this technique could prove very useful. Other potential applications of this manufacturing method e.g. pyroelectricity, giant electrostriction, etc. will be discussed.